

Integrated Functional Appraisal of the Environment, Health and Safety Division

September 2000

Integrated Functional Appraisal Team Leader: Otis Wong

1.0 Executive Summary

An Integrated Functional Appraisal (IFA) was conducted of the Environment, Health and Safety (EH&S) Division in September 2000. Results of the appraisal indicate that the Division is effective in identifying its hazards, controlling hazards through formal authorizations (i.e., Radiation Work Authorizations, Radiation Work Permits, Sealed Source Authorizations, Satellite Accumulation Areas, etc.), and operating within these authorizations. The Division shows that it performs particularly well in completing required training, having no major deficiencies in its authorized work, conducting management walkthroughs, and holding all personnel accountable for ES&H. However, the Division has a relatively high Total Recordable Case (TRC) rate which may indicate that Division work can be conducted in the safer manner.

Concerns/issues raised by the IFA include:

- Some work procedures identified by work plans, authorizations, and regulations are not being rigorously followed which can result in violations of regulations and/or staff accidents and injuries.
- Some work environments are cluttered with old equipment and supplies which can lead to staff injuries in the event of an earthquake.
- Some activities do not follow best work practices and require improvements.

2.0 Introduction

The IFA of the EH&S Division is part of the four-tiered LBNL Self-Assessment Program. Each tier of self-assessment has its own review objective and is conducted by different types of Laboratory personnel. The four types of self-assessments are:

Assessment	Type of Review	Performed by
Division Self-Assessment	Workplace Safety	Line Management with EH&S Support
Integrated Functional Appraisal	In-Depth Technical	EH&S Subject Matter Experts
Safety Review Committee MESH	Safety Management	Peer Researchers & Staff with EH&S Support
Appendix F Self-Assessment	DOE/UC Contract	EH&S Functional Managers

IFA is an in-depth technical review of Division operations conducted by ES&H subject matter experts. The reviews are conducted on a triennial basis with the previous IFA of the EH&S Division conducted in 1997. For the fiscal year 2000 review of the Division, the IFA team and their area of focus include:

Otis Wong (team leader)	Industrial Hygiene
John Chernowski	Waste Management and Environment
Matt Kotowski	Industrial Safety
Mike Schoonover	Radiation Protection

The primary objectives of this year's appraisal are to (1) identify and update the hazards within EH&S; (2) evaluate the effectiveness of controls for the hazards; and (3) assure that EH&S is operating within its authorization basis.

3.0 Appraisal Procedures

The scope of the appraisal includes:

- Review of previous assessment reports of the Division, including the previous IFA report, the FY00 Division Self-Assessment report, the last SRC MESH report, and FY00 inspection reports by regulatory agencies.
- Review of FY00 ES&H performance data, including training completion records, injury and accident statistics (TRC and LWC), waste minimization goals, and conformance to work authorizations.
- Review of controls and procedures required by work authorizations such as Radiation Work Authorizations (RWAs), Radiation Work Permits (RWPs), Sealed Source Authorizations (SSAs), Satellite Accumulation Areas (SAA), and Activity Hazard Documents (AHDs).
- Inspection of all division facilities under formal authorizations.
- Random inspection of at least 10 percent of facilities with lower, industrial type hazards.

Division facilities with formal authorization involve the handling and storage of hazardous and/or radioactive materials. For the purpose of the IFA, these facilities are the focus of the appraisal. It should be noted that although under authorization, the facilities are generally classified by DOE and the Laboratory's Hazards, Equipment, Authorizations, and Reviews (HEAR) database as low hazard facilities. Division authorizations were updated by the EH&S Group Leaders as part of the pre-IFA planning. The facilities and the corresponding authorizations are the following:

Facility	Authorizations	Type of Work	Responsible Person
26	SAA MWSAA RWCA	Waste storage Mixed waste storage Radioactive waste	Jim Floyd Gary Zeman
51	RWP 99-087 RWP 00-110	Process steel plates General controls	Paul Whybark John Ahlquist
55	RWA 1009	Analytical lab	Jim Floyd
70 Pit Room	RWP 00-094 SSA 101 SAA	Pit Room reorganization Sealed sources Waste storage	Robin Wendt John Ahlquist

70A-1129	RWP 00-100	Characterize material from Pit Room	Robin Wendt
71	RWA 1126	Calibration facility Sealed sources	Jim Floyd Edson Wong Jim Floyd
75	RWA 1092 SAA RWCA RWP 00-095	Shipping and package receipt Waste storage Radioactive waste storage Analysis of Pit Room materials	Jim Floyd Gary Zeman Jim Haley
75A	RWP 00-098	Characterize material stored in 75A	Bette Muhammad
75C	SSA 103 RWA 1126	Calibration facility - sealed sources	Ted DeCastro Jim Floyd
75D	SSA 104	Calibration sources	Henry Tran
76	RWA 1009 SAA MWSAA	Analytical lab Waste storage Mixed waste storage	Jim Floyd
85	RWA 1015 WAA FSAD	Radioactive and mixed waste handling Waste storage Safety analysis document	Nancy Rothermich
90	SAA	Waste storage	Jim Floyd

Lower hazard facilities that were randomly inspected included B90K; B90-0026; B90-0014; B26 Health Service Clinic; B75B; and B75-123.

4.0 Appraisal Results

Based on the reviews of past assessment reports and the FY00 ES&H performance data, the EH&S Division has effective and robust systems for identifying hazards, developing and implementing controls, and assuring the work is conducted within the conditions and requirements of the authorization. The systems include (1) a comprehensive radiation protection program that manages work with radioactive material through authorizations (i.e., Radiation Work Authorizations [RWA], Radiation Work Permits [RWP], and Sealed Source Authorizations [SSA]); (2) a waste management program that regulates hazardous wastes through controlled areas (i.e., Waste Accumulation Areas [WAA], Satellite Accumulation Areas [SAA], Mixed Waste Satellite Accumulation Areas [MWSAA], and Radioactive Waste Controlled Areas [RWCA]); and an active safety committee and self-assessment program to independently assure that Division work is done safely.

The IFA inspections of Division facilities and work activities, however, revealed instances of non-compliance with prescribed work policies and procedures and opportunities for improvement in work safety. Three primary trends are identified:

1. Some work procedures identified by work plans, authorizations, and regulations are not being rigorously followed which can result in violations of regulations and/or staff accidents and injuries.
 - Building 26, Health Clinic: Biohazardous waste containers may not be sanitized after each disposal as specified by procedures from the Biomedical Waste Program.

- Building 51: The lead compliance work plan for operations involving grinding, sanding, milling, and drilling is not being consistently followed by Lab workers and contract employees.
 - Building 51: A small amount of PCB impregnated paper is not being segregated from other wastes or disposed of as hazardous waste.
 - Building 71-129: Cave L interlock procedures are not available at the site for the supervisor. Gas cylinders are not being properly capped.
 - Building 75A: The plastic tent housing the glove box workstation obstructs the building sprinkler system. Chemical containers are unlabeled and not stored in secondary containers.
 - Building 75C: Not all personnel who handle the radioactive sources are listed in the sealed source authorization.
 - Building 26, RAML, Building 51, Building 75C, Building 76, room 135: Areas are not being posted or labeled as controlled areas for radioactive materials or waste accumulation sites.
2. Some work environments are cluttered with old equipment and supplies that can lead to staff injuries in the event of an earthquake.
- Building 26, outside room 30: The storage locker is cluttered with old samples. The retention period for the samples may have expired.
 - Building 70-147: The room adjacent to the Pit Room is overcrowded with 4-5 staff and is generally cluttered with equipment and supplies.
 - Building 76, room 135: The room is cluttered with old equipment and supplies. Equipment include the alpha beta counters, alpha spectroscopy, gamma counter, and equipment racks. The equipment should be seismically secured if retained.
3. Some activities do not follow best work practices and require improvements.
- Building 26, RAML: The centrifuge does not have an interlock system. Sample bottles containing NaOH should be in secondary containers.
 - Building 70-147: The Pit access ladder, ladder clearance and railing, lead pig storage, and aisle clearance are not up to recommended standards as identified in a previous evaluation performed by the EH&S safety engineer.
 - Building 71, Cave L: The irradiator is only partially bolted to the floor.
 - Building 75: The flammable storage cabinet does not have a self-closing door.
 - Building 76, room 135: A plastic sheet is taped over the ceiling to capture water leaking from a Facilities operation above room 135 on the next floor.
 - Building 85: The P-10 gas cylinder bank is lacking a pressure relief valve.
 - Building 90: The granite block on the back table is not sufficiently braced to prevent the block from falling off the table in the event of an earthquake. Two computer workstations are not ergonomically correct.

The complete inspection results with the recommended corrective actions and responsible persons are the following:

Location	Finding	Corrective Action	Responsible Person
26, health clinic	It is not obvious that biohazardous waste containers are being sanitized after each disposal as specified by procedures.	The wipe-down procedure should be explicit to the staff performing the task. Instructions on labels or signage posted nearby are possible options.	Jon Kawamoto
26, outside of room 30	The storage locker across from room 30 is cluttered with old	Cleanout the storage locker of all unneeded items. Some	David Yaeger

	samples.	samples appear to very old (> 5 years) and may be stored beyond the required retention period.	
26, RAML	The mixed waste container in the hood lacks the required hazardous waste label and radiation tag. Also the area is not designated a MWSAA.	Appropriate labels are required for the mixed waste container. The area also needs posting that it is a mixed waste satellite accumulation area (MWSAA).	David Yaeger
26, RAML	The centrifuge does not have an interlock system. This deficiency was identified in the last IFA three years ago.	Install an interlock system for the centrifuge	David Yaeger
26, RAML	The sample bottles contain NaOH solutions are stored high on shelves and can fall off and spill.	Place the sample bottles in secondary containers. Label the bottles and/or secondary containers of the NaOH content.	David Yaeger
51	Because the material is designated as radioactive, the finished metal shielding in the lay-down area in Bldg. 51 should be posted and cordoned off as a controlled area.	Post and rope-off area as a Controlled Area.	Paul Wybark
51	The lead compliance work plan for operations involving grinding, sanding, milling, drilling, etc. is not being followed.	Workers should adhere to the written procedures of the work plan, or the work plan should be revised to reflect changes in the current operations.	John Ahlquist/Rob Connelly
51	The paper between the yolk plates contains 10 ppm of PCBs, above the California regulatory standard of 5 ppm. Although the majority of the paper is scraped and packaged for hazardous waste disposal, there are scraps of paper littering the ground that are not being handled properly. The paper on the ground is being swept up with other debris (metal shavings and filings) and sent to a radioactive waste recycling facility. This is not an appropriate destination for the PCB regulated waste.	The PCB impregnated paper should be segregated from other waste, stored in separate drums, and disposed of as hazardous waste.	John Ahlquist/Mark Lasartemay
70-147 (Pit Room)	At the time of the inspection, the work room adjacent to the Pit Room was overcrowded. The room is insufficient to house the 4-5 staff if they work there for the	Evaluate the normal occupancy load for the room. If 4-5 staff are stationed there for the majority of the day, consideration should be given	John Alquist

	majority of the day. One workstation is not ergonomically correct. The aisle way is cluttered and the fire extinguisher is not easily accessible.	to relocating staff to other space. Request an ergonomic evaluation for the workstations. Remove the clutter in the room to free up sufficient aisle space and allow for easy access to the fire extinguisher.	
70-147 (Pit Room)	There are several safety concerns previously identified by the EH&S safety engineer. They include the Pit access ladder, ladder clearance and railing, lead pig storage, and aisle space. The IFA team concurs with these outstanding safety issues.	Correct deficiencies and concerns as identified in 8/24/00 memo (FS-00-144)	John Alquist
70A-1129	No findings		
71 - Cave L	The irradiator is only partially secured to the cement floor so that it may topple off in the event of an earthquake.	Request a structural evaluation and possible seismic upgrade for the irradiator.	Edson Wong
71 - Cave L	The gas cylinders in the Cave are infrequently used and therefore should be capped.	Remove the regulators and cap the gas cylinders when not in use.	Edson Wong
71-129	EHS Procedure 354.1, Cave L Interlock Procedures, has not been provided to the site supervisor.	Distribute an approved copy of EHS Procedure 354.1 to the site supervisor	Edson Wong
75	The flammable storage cabinet does not have a self-closing door.	Provide a door-closer spring for the flammable cabinet.	Jim Haley
75A	The plastic tent housing the glove box workstation obstructs the building sprinkler system.	Request an evaluation by the fire protection engineer.	Bette Muhammad
75A	The liquid chemicals are not labeled or stored in secondary containers.	Label all chemicals and store hazardous liquid chemicals in secondary containers.	Bette Muhammad
75C	The main gate of the fenced area around B75C is posted only as a radioactive material storage area. It should also be as a Controlled Area. The source storage areas within the building should be labeled due to the high activity levels of radioactive sources stored and used in the building.	Post the fenced area as a Controlled Area. Provide signage or labels indicating the source storage areas within the building.	Jim Floyd
75C	Not all personnel who handle the radioactive sources are listed in the authorization (SSA 103).	List all personnel who handle the radioactive sources in the Sealed Source Authorization.	Jim Floyd
76, room 135	There is an apparent water leak from the up-stair paint booth	Contact Facilities (Bill Birbeck) to investigate the cause of the	James Hefley

	operation. A plastic sheet has been taped over the ceiling to capture the leaking water.	leak from the room above and to institute repairs to permanently stop the leak.	
76, room 135	The room is cluttered with old equipment and supplies that may present a safety hazard. Items in front of the electrical panel are blocking the required clearance. Several equipment (i.e., alpha beta counters, alpha spectroscopy, gamma counter, and equipment rack on table) are not seismically tied down.	General housekeeping is required. Contact Facilities (Fred Anglis) to evaluate and recommend seismic safety for the room.	James Hefley
76, room 135	Storage lockers located outside of the building are used to store radioactive material. Although the lockers currently have no radioactive material, posting is still required if it is a designated area for radioactive material.	Post the lockers with the appropriate radiation signage.	James Hefley
85 - exterior northwest corner	The P-10 gas bank is lacking a pressure relief valve.	Provide a pressure relief valve set no higher than the maximum allowable work pressure (MAWP) of the lowest rated component. Provide a pressure relief valve to protect the intermediate regulator.	Nancy Rothermich
90-0026	The granite block on the table is not sufficiently braced to prevent the block from falling off the table and blocking an aisle way as a result of an earthquake.	Install bracing along the front edge of the table to seismically secure in place.	James Floyd
90-0026	The two computer workstations in the front office are ergonomically questionable.	Request an ergonomic evaluation from Jeffrey Chung	James Floyd
90G, cubicle 119	The 5-drawer lateral file cabinet is not bolted down for seismic safety.	Install seismic anchors for the lateral file cabinet.	Don Van Acker

5.0 Follow-up

All findings identified in section 4.0 of this report will be entered into the EH&S Division Self-Assessment Database (LSAD). The Office of Assessment and Assurance will track the corrective actions to completion.